SB608
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No.15

Number 15

Tree Pest Leaflets
PINE SAWFLIES
(*Tenthredinidae*)

red by J. V. SCHAFFNER, JR., Bureau of Entomology and Plant Quarantine, United States Department of Agriculture.

Courtesy of Conn. Agr. Exp. Station

DIPRION SIMILE Hartig. 1. Adults, twice natural size; 2. larvae feeding on pine, natural size; 3. eggs in pine needle, about 4 times enlarged; 4. Cocoons, natural size.

Published for the Cooperators
by the
MASSACHUSETTS FOREST AND PARK ASSOCIATION
3 Joy Street, Boston

July 1937

Library
Forest Service - USDA
370 Reed Rd.
Broomall, Pa. 19008

Issued jointly through cooperation of the following agencies:

The State Foresters, State Departments of Agriculture, State Agricultural Experiment Stations, Extension Services, Forest Schools and Forest and Park Associations of New England and New York, and the Northeastern Forest Experiment Station, the Division of Forest Pathology, Bureau of Plant Industry and the Division of Forest Insect Investigations, Bureau of Entomology and Plant Quarantine of the United States Department of Agriculture.

PINE SAWFLIES

(*Tenthredinidae*)

Sawflies are rather robust, heavy bodied, four-winged insects of the order Hymenoptera, family Tenthredinidae (Fig. 1). The abdomen of the female is equipped with a sawlike appendage for cutting slits in the host plant in which she deposits her eggs (Fig. 3), hence the common name "sawfly."

The larvae of sawflies resemble those of moths and are often referred to as false caterpillars. Unlike true caterpillars, however, they have only a single eye on each side of the head and a different number of pairs of prolegs, or false legs, situated behind the 3 pairs of true legs. The common sawfly larvae that feed on pine needles have 8 pairs of prolegs while those of the moths and butterflies never have more than 5 pairs (Fig. 2).

A number of species of sawflies attack pines in the northeastern part of the United States, and of these 7 known to have been troublesome in recent years are here discussed. The larvae of these species usually feed in groups on the foliage. When full grown they spin tough reddish or brownish capsule-shaped cocoons and in these they transform to adults (Fig. 4).

Although the life cycle and seasonal history vary with the different species, the feeding habits are quite similar.

Symptoms of Damage:—During the spring and early in the summer the old or mature foliage is preferred by the larvae and usually is completely devoured before the new needles are attacked. The broods appearing late in the summer and in the fall, however, will attack the current year's growth as well as the older foliage. Severe infestations generally are more prevalent on young trees, particularly those in stands where the crowns have not as yet closed, or on those growing more or less in the open.

Complete defoliation of both the mature and the new needles of pine is fatal to the tree. Those severely fed upon but not completely denuded may not be killed outright but frequently succumb from later attacks by secondary enemies, and those that recover usually are stunted or poorly shaped.

LeCONTE'S PINE SAWFLY

(*Neodiprion lecontei* Fitch)

LeConte's sawfly is considered a serious enemy of pine in nurseries, on ornamentals, and in forest plantations in the eastern part of the United States.

Host Trees:—In New England this species is common on pitch pine (*Pinus rigida*), Scotch pine (*P. sylvestris*), Mugho pine (*P. mughus*), and occasionally on other species. According to Middleton, it seems to have a preference for jack pine (*P. banksiana*), red pine (*P. resinosa*), and scrub pine (*P. virginiana*), each of which furnishes a local host in some part of the Eastern States.

Description of larvae:—The young larvae are whitish and unspotted, with the head brownish; but later, after undergoing a series of molts, they become yellowish and have at least six rows of prominent irregular black spots on the body, with the head reddish. They are about 1 inch long.

REFERENCE

Middleton, William.—A Sawfly Injurious to Young Pines. U. S. Dept. Agr. Farmers' Bull. 1259, 11 pp., illus. 1927.

Host Trees:—Red pine (*Pinus resinosa*).

Description of larvae:—The larger larvae vary from dull grayish-green to blackish on the back (dorsum) and greenish-white beneath. Each has a mid-dorsal stripe of light green and a fainter one on each side, also a dull blackish stripe at the base of the legs. The head is black and the thoracic legs are black with whitish annulations. After the larva ceases to feed and before spinning the cocoon it becomes dull green in color with four more or less distinct longitudinal blackish stripes on the body, and the head is yellowish-brown. The larvae are about three-fourths inch in length.

Life History:—The life cycle and habits of this sawfly are very similar to those of *Neodiprion dyari.*

Neodiprion sertifer Geoff.

This species apparently was introduced from Europe prior to 1925, but has only recently been identified. It has been recorded only from New Jersey.

Host Trees:—Mugho pine (*Pinus mughus*) and Swiss Mountain pine (*P. montana*).

Description of larvae:—The larvae are dirty grayish-green with a noticeable longitudinal dorsal line; laterally there are two fine, nearly white lines bordering another line of very intense green; the head and thoracic legs are black. These larvae are about seven-eighths inch in length.

Life History:—The life cycle and habits of this species appear to be similar to those of *Neodiprion dyari.*

THE IMPORTED SAWFLY

(*Diprion simile* Hartig)

This European insect was first discovered in this country in Connecticut in 1914. It is now known to occur in Massachusetts, Rhode Island, Connecticut, New York, New Jersey, Pennsylvania, and Indiana.

Host Trees:—White pine (*Pinus strobus*) and other 5-needled pines are preferred as food, but records show that the softer 2-needled pines also are suitable for food plants.

Description of larvae:—The larva has a black head, yellowish-green body with a double stripe of black down the back, and sides of body mottled with yellow and black. It is about one inch long.

Life History:—The life cycle is similar to that of LeConte's Sawfly. The cocoons may be spun on twigs and branches as well as in the duff on the ground.

Records show that this species may reproduce parthenogenetically but that the progeny in this case are always males.

REFERENCE

Middleton, William.—The Imported Pine Sawfly. U. S. Dept. Agr. Dept. Bull. 1182. 22 pp., illus. 1923.

ARTIFICIAL CONTROL

In the Forest:—Owners should not be unduly alarmed on finding a few sawfly larvae on an occasional pine, as sometimes infestations persist for a period of years without increasing enough to cause serious injury. It is advisable, however, to watch plantations and natural reproduction and to make it a habit to destroy all colonies of sawfly larvae whenever found.

If an infestation becomes serious and the stand is of sufficient value to warrant the expense, a thorough spraying, as soon as the larvae are found, with powdered lead arsenate at the rate of 4 pounds to 100 gallons of water and fish oil as an adhesive at the rate of 4 ounces by weight to each pound of the powdered insecticide will give effective control.

In Nurseries and on Ornamentals:—When infestations are light and scattered, hand picking is most economical and efficient. In heavy infestations spraying should be practiced as recommended above. The application of the insecticide containing the adhesive affords protection for many weeks.

Life History:—In the northeastern part of the United States there may be one or two broods, or one and a partial second brood annually. Larvae maturing by the second or third week in July may transform to adults in August or September, or some may remain dormant in the prepupal stage in the cocoons and not develop to adults until late in May to July of the next year. Larvae maturing from late in July to October do not transform to adults until June or July of the following year, and sometimes a few prepupal larvae may remain dormant and not transform to adults until the second year. Thus broods of larvae may be found feeding from June until late in the fall. In each case, however, the winter is passed as prepupal larvae in tough reddish-brown capsule-shaped cocoons in the duff or top soil beneath the trees.

ABBOTT'S PINE SAWFLY

(*Neodiprion pinetum* Nort.)

Abbott's sawfly is distributed throughout the northeastern part of the United States.

Host Trees:—The larvae of Abbott's pine sawfly feed upon white pine (*Pinus strobus*) and occasionally on pitch pine (*P. rigida*).

Description of larvae:—The larvae are yellowish-white with four longitudinal rows of black spots on the body, and the head is black. They are about one inch long.

Life History:—The life cycle and habits are very similar to those of LeConte's Sawfly.

REFERENCE

Felt, E. P.—Insects Affecting Park and Woodland Trees. N. Y. Mus. Mem. 8, vol. 2, pp. 414-415, 1908.

Neodiprion pini-rigidae Nort.

Host Trees:—The larvae of *Neodiprion pini-rigidae* feed on pitch pine (*Pinus rigida*).

Description of larvae:—The larvae are dull green with a double longitudinal line of black on the back and a broken stripe of black along each side of the body, and the head is dull brown. The length is about three-fourths inch.

Life History:—Records indicate that the life cycle and habits are similar to those of LeConte's sawfly.

Neodiprion dyari Roh.

This species is found in the eastern part of the United States north from Virginia. It is more or less common and there are occasional local outbreaks in southern New England.

Host Trees:—These larvae feed on pitch pine (*Pinus rigida*) and scrub pine (*P. virginiana*).

Description of larvae:—The larvae are dull green with four more or less distinct longitudinal blackish stripes on the body, and the head is black. They are about three-fourths inch in length.

Life History:—There is one generation annually, although occasionally some prepupal larvae remain dormant in their cocoons until the second year. The adults issue in September and October, and the females deposit their eggs in slits in needles of the current year's growth. The winter is passed in the egg stage and hatching occurs early in May. The larvae are social and feed on the mature foliage, usually devouring all on one branch before migrating to another. They become full grown in June and spin their cocoons in the duff near the base of the tree.

Neodiprion sp.

This appears to be an undescribed species and has been recorded from Massachusetts and Maine. It caused serious defoliation in plantations in 1935 and 1936.